REF 7/C

Year XVI October, 1942 No. 10

INTERNATIONAL INSTITUTE OF AGRICULTURE

INTERNATIONAL BULLETIN OF PLANT PROTECTION

PUBLISHED MONTHLY

REPRINT FROM THE 'INTERNATIONAL REVIEW OF AGRICULTURE'

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IMPERIAL MYCOLOGICAL INSTITUTE 19 JAN 1944

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1942

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BY THE INTERNATIONAL INSTITUTE OF AGRICULTURE

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ROME — PRINTING OFFICE CARLO COLOMBO.

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The hour of broadcasts is Central European Time, which is one hour ahead of Greenwich Mean Time and 5 hours ahead of Eastern Standard Time in the United States.

ACTIVITY OF THE INTERNATIONAL INSTITUTE OF AGRICULTURE

Permanent Committee of the Institute. — The Autumn Session of the Permanent Committee will be opened on October 10. The Agenda deals with administrative and scientific questions which reflect all the activity of the International Institute of Agriculture. The next issue of this Bulletin will contain a summary of the work of this Session.

Albania adheres to the I. I. A. — The Government of Albania has decided to adhere to the International Institute of Agriculture.

The new Japanese Delegate. — Mr. Shumichi Case, Minister Plenipotentiary' Counsellor of the Embassy and Chargé d'Affaires of Japan in Rome, has replaced Mr. Yoshiro Ando, Embassy Counsellor who has been recalled to Tokyo, as the Delegate of Japan in the Permanent Committee of the International Institute of Agriculture.

The new Delegate of Romania. — The Romanian Government has appointed as a Delegate of Romania in the Permanent Committee of the International Institute of Agriculture, Col. Ing. Jon Angelesco, who replaces Mr. Constantin Enesco, Economic Counsellor, recalled to Bukarest.

International Forestry Center. — The VIth Session of the Committee of the International Forestry Center was held at Vienna from the eighth to the twelfth of last September. One of next numbers of this Bulletin will contain a summary of the works of this Session.

Publications of the Institute. — Two new volumes – yearly publications – have been recently added to the list of those published by the Institute. These publications, which have been well received by the press and highly appreciated by the experts of competent circles, are:

(1) *The International Yearbook of Agricultural Legislation*, XXXIst Year, 1941. — Like its predecessors, this volume contains the text of the principal agricultural laws promulgated in the different countries in the year 1941, systematically grouped. An introductory chapter (some extracts of which have been printed apart and distributed already) deals with the *" Social function of agricultural institutions and juridical agricultural relations in the most recent legislation of the different countries.*

(2) *International Yearbook of Forestry Statistics*, Vol. III, *Africa*. — This volume published in French and English, is subdivided in two parts; of which the first deals with the forests of Africa, and the second with imports and exports of wood to and from the countries of this continent during the years 1930 to 1939.

The activity of the Institute as regards the regular issue of its monthly publications has continued normally, in spite of present difficulties.

No. 7-8 (July-August 1942) of the Monthly Bulletin of Agricultural Science and Practice contains a study of the problem of increase in vitamin content of agricultural products in view of improving the diet of the people. This article deals with some aspects of the food problem and their solution at the time of reconstruction after the end of hostilities.

No. 9 (September 1942) of the "Monthly Crop Report and Agricultural Statistics" contains an article on "*The distribution of sheep according to age, sex and destination*" which deals with the question of the classification of sheep in livestock statistics. This article follows the two preceding ones on "*The distribution of oxen according to age, sex and destination*" published in No. 6 (June 1942) and "*The distribution of pigs according to age, sex and destination*" which appeared in No. 7-8 (July-August 1942) of the same Bulletin. These works are part of a series of studies on some particular aspects of the problem of improvement and unification of agricultural statistics, intended to prepare the base for the discussions and decisions that the official statisticians of interested countries may be called to take as soon as circumstances will allow.

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Alfani, A. Il libro e l'istruzione tecnica contro la deruralizzazione. Firenze, G. Barbèra, 1942. 32 p. (Biblioteca di coltura per i rurali, sotto gli auspici della Reale Accademia dei georgofili, v. 11).

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v. 1. Allgemeines. 27 p.
v. 2. Brauwirtschaft. 28 p.
v. 3. Tierwirtschaft. 23 p.
v. 4. Fischwirtschaft. 56 p.
v. 7. Kartoffelwirtschaft. 39 p.
v. 8. Milch-und Fettwirtschaft. 60 p.
v. 9. Saatgutwirtschaft. 88 p.
v. 11. Weinbauwirtschaft. 31 p.
v. 12. Zuckerwirtschaft. 45 p.

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INTERNATIONAL BULLETIN
OF PLANT PROTECTION

1942 No. 10

DISCOVERIES AND CURRENT EVENTS *

SPAIN.

Forest Pathology Notes †

Among the diseases studied, during the first semester of 1942, at the Fungi and Plant Pathology Laboratory of the Forestry Institute for Research and Experiments, Madrid, the following, owing to their phytopathological importance, stand out:

A defoliation of replantings of *Pinus insignis* Dougl. in the Province of Guipuzcoa. — This defoliation which, in some cases, led to the dying off of entire groves, was caused chiefly by *Naemacyclus niveus* Sacc., *Septoria acicola* Sacc. and *Diplodia acicola* Sacc. (the last two species are new to Spain). The treatment of nurseries and replantings with the German product ' Motz ' (based on polymers of formaldehyde) has not yet been tried owing to import difficulties due to the war.

A disease of poplar groves (*Populus nigra* var. *fastigiata* Poir.) 5 to 7 years old, in the Burgos Province. — The branches and boughs of the poplars wither and sometimes many young trees die-off. This disease is caused by *Dothiorella populnea* Thüm., a species new to Spain the mycelium of which develops in the living part of the bark. The stromata of the parasite are found fairly frequently on branches measuring 1 cm. and less in size, associated with the saprophytic species *Coniothecium radians* Sacc. the mycelium of which lives in the rhytidome. As a preventive measure, spraying the healthy branches with 5 per cent. Bordeaux mixture is being tried, after pruning and burning all diseased branches.

A disorder of beeches in some forests of the Navarra Province. — This disorder, in Spain caused principally by *Hypoxylon coccineum* Bulliard, *Bispora monilioides* and *Schizophyllum commune*, and known in Germany under the names of ' Stocken ', ' Verstocken ', ' Buchenstockfäule '. ' Ersticken ' and ' Vermucken ', is due to the difficulty in clearing away the wood in these forests, as the cut and disbarked beeches have to remain for a certain period on the ground in the forest. At present, an endeavour is being made, as a preventive measure, to protect the exposed part of the timber by applying a 15 per cent. solution of zinc chloride.

* Under this and the third heading the countries are arranged in French alphabetical order.

† Communication from Sr. José Benito Martinez, Forest Engineer, Director of the Fungi and Plant Pathology Laboratory, Forestry Institute for Research and Experiments, Madrid, transmitted by the official correspondent of the International Institute of Agriculture, Sr. José del Cañizo, Agricultural Engineer, Bachelor of Natural Science, Central Station of Plant Pathology, Madrid, Spain.

SWITZERLAND.

Progress of the Colorado Beetle, *Leptinotarsa decemlineata*, in the Country *

Situation on June 1, 1942.

Emergence from the ground of winter adults began fairly early this year. Already on April 21, a half a dozen insects were captured at Cressier, Neuchâtel and, the next day, several were found at Aïre, Genève. In both cases, it is probable that tilling operations brought the insects to the surface and roused them. Normal emergence, in fact, only began at mid May: May 19 at Aigle, Chavannes-des-Bois, Vaud and Collombey Muraz, Valais. Mass appearances were reported after May 20, when light showers moistened the soil. On May 27, at Chavornay, adults were found still in the ground despite the great heat of that day (approximately 27°C. in the shade). As usual emergence was spread over several weeks.

It is still too soon to give an exact report of the situation which develops rapidly from day to day. The reports secured on June 1, however, make it possible to form an idea of the infestation of the cantons at that date.

At Genève, since May 20 an abnormal abundance of perfect insects, either scattered or assembled together, has been noticed, chiefly in the environs of Aïre, Troinex, Praille and Meyrin (up to 200-300 per 100 sq. metres at the French frontier). Other regions, in compensation, are less contaminated. The first ovipositions were reported from May 20 onwards and hatchings towards the end of the month.

In the Vaud canton, an abundant emergence was observed in the district of Nyon and the Orbe Plain. Isolated insects were captured to a small extent everywhere except in the Gros de Vaud and Jorat. On June 1, over 60 communes had reported discoveries and, from May 22, ovipositions became more and more numerous. The first larvae were found on May 25 in the Orbe Plain, at Allaman and Saint Sulpice. Several communes have already ordered general scouting and collection of the insects.

In the canton of Fribourg, the first discoveries were also made beginning from mid May. The districts of the Broye and the Lake are infested in a scattered manner; insects are reported at different parts here and there. In the rest of the canton, infestation is as yet very weak. In Gruyère only one insect was discovered.

In Neuchâtel, despite the first very early discovery, mass emergence did not really occur until the middle of May. The commune of Cortaillod reports a very heavy infestation of nearly all the potato fields and hatching of larvae from May 25 onwards. The other communes at the Pied du Jura such as Landeron, Saint Blaise, Bevaix, now appear to be attacked. In the intermediate valleys, where moreover, the potatoes were harvested very late, there is nothing to report except that at Couvet 20 adult insects have been captured.

* Communication from the Federal Station for Experiments and Seed Control, Lausanne (Mont Calme), Switzerland.

In the Bernese Jura, some insects were noted on May 3. It is only since May 20, however, that they became more and more numerous, especially at the bottom of the sunniest valleys.

Valais, although affected since May 19, this year, as yet, appears to be infested but very slightly.

In German Switzerland, the following cantons have reported captures: Zürich, Bern, Luzern, Schwyz, Obwalden, Zug, Solothurn, Basel-Stadt, Basel-Land, Schaffhaussen and Argau. Solothurn, Luzern, Bern, Basel-Land and Argau appeared to be attacked the most.

* * *

As is seen the new control campaign starts in force. Infestation of the potato crops is high at the Pied du Jura, from Genève to Zürich. The weather abnormally hot for the time, favours and accelerates greatly the development of the Colorado beetle. Moreover, the winds from the West prevail. They are accompanied by sudden storms which will probably bring across the Jura, as was the case in previous years, numerous adult insectes. It is necessary, therefore, to be prepared for a very strenuous compaign.

The organization of compulsory control, which has given proof of its value for the last five years, remains in force as before. The Federal Commission for the control of the Colorado beetle, assisted by the Federal Agricultural Experiment Stations, already during the winter, has issued general instructions and assured the necessary financial means. The cantonal Commissioners commissioned with the execution of the measures prescribed had already met in March and made their arrangements for ensuring in thier cantons, with the assistance of the cantonal agents, an active protection of all potato crops. Thanks to wise foresight, the necessary insecticides are available in sufficient quantities. It is advisable, however, to economize in their use. To this end, operations will be carried out in patches, that is, treatment will be limited to the foci and the immediate surroundings according to the directions of the communal agent. The insecticides will again be supplied by the Confederation at a reduced price lower than wholesale purchase cost, but, however, slightly higher than that of last year owing to the increased cost of the raw materials.

When the stocks of diplumbic arsenate will be exhausted, the communal agents will furnish calcium arsenate in powder for washes. The experiments carried out for the last three years at the Federal Stations have, in fact, proved that calcium arsenate, much cheaper than the diplumbic compound, is very efficacious if well prepared. The Federal Commission, on the basis of these results, requested, as long ago as two years, Swiss manufacturers to equip their factories for the production of this arsenate, today an accomplished fact. The experiments of Federal Agricultural Stations also proved last year that a synthetic insecticide discovered at a Swiss factory is very effective against the Colorado beetle and against various other parasites. This insecticide, since called ' Gésarol ', acts by contact and by ingestion. This year it will be tested over larger areas. If its value is confirmed, it will be of great service as, not being poisonous for man and

warm-blooded animals, it will be able to be employed in the place of arsenates and even as a substitute for rotenone dusts which become difficult to import and which are, however, necessary for small plantings with other vegetables.

General school scoutings will soon be ordered. They have, in fact, been found indispensable as they make it possible to collect many insects, to determine within a short time the actual extent of infestation and thus to decree at an opportune moment the compulsory treatments.

VARIOUS QUESTIONS

Action of Contact of Different Metals on the Development of Neoplasms by *Bacterium tumefaciens* *

In the course of earlier research on the influence at a distance of metals on the neoplasms caused by *Bacterium tumefaciens* Smith et Townsend, it was possible to establish that the metals, at a distance of 15 or 20 cm. from the branch inoculated with the bacterium, acted as an excitant on the growth of the pathological tissues developing in consequence of the bacterial inoculation [1].

The metal, acting at a distance (through the air) exercizes a biological action on all the young tissues; but on the pathological meristems the stimulating action of growth is singularly more effectual than that exerced on the normal meristems of the same plant species, in other words, that the pathological meristem tissues prove much more susceptible that the normal meristem tissues to the action of metal at a distance. It has not yet been fully explained what, in these experiments, is the mechanism of the action of the metal, namely, of what nature is the stimulating or, in some cases, depressive cause which provokes these evident biological facts, but it is possible to formulate hypotheses based on present physico-chemical and biological knowledge.

Among the hypotheses I proposed for the interpretation of the biological effects ascertained I recall the following:—

(*a*) The stimulating biological agent of growth could be constituted by the exhalations which, in minimum doses, are actually emitted from metallic surfaces; this interpretation, however, is not definitely justified by the results of some experiments, and is in opposition with the results of other experiments as, for example, those which prove the lowering effects from a distance.

(*b*) The metal would act as a secondary radiator of the permanent cosmic radiation and the biological effects should be attributed to the secondary radiation, ' sciami ' or ' Schauer ' determined particularly by lead, when this latter is affected by cosmic radiation. The biological influence of metals would be, in this hypothesis, due to these ' Schauer ' or to the ionization of the air, which is produced in an environment traversed by these corpuscles. The fact that these

* Communication from Professor VINCENZO RIVERA, Director of the Plant Pathology Institute, University of Perugia, Italy.

' Schauer ' have a biological effect is proved by recent experiments, in which the action of the metal is exersized through very thin plates of glass or quartz [2].

It may be acknowledged that in an experiment of this kind, the metal influences the living matter through the action of several factors, namely, that it may have a multiple action; it must be admitted, however, that the biological effects verified depend directly or indirectly on the secondary radiation of the cosmic radiation. The statements, therefore, open up a wide field of study and interpretation of biological facts, and the presence of metals in the living tissues of animal and plant organisms stand out as a fact so closely bound up with life that it would have been difficult to imagine it before these experiments.

In the biological action of penetrating radiation and in the biological action of metals at a distance — group of new facts only recently come to the knowledge of scientists [3] — a general interest is discovered from the fact that the action of metals has an influence on animal and on plant tissues, and a special interest through the influence the metal exercizes on the pathological tissues of the two kingdoms.

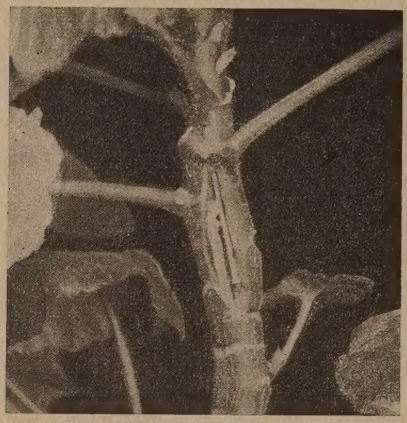
The plant pathologist, more easily than the human pathologist — and the plant more clearly than the animal organism with its tissues constituted in a complex manner can show — have the possibility of setting the terms of this interesting problem.

What, however, is the behaviour of pathological plant tissues in regard to the metal placed in contact with them?

At the Institute of Plant Pathology, University of Perugia, Dr C. Sempio has already shown, by experiments carried out on different species of fungi and, in particular, on *Thielavia basicola* Zopf, that between the action at a distance and action by contact of metals on the living organism, no parallelism of effects is found [4].

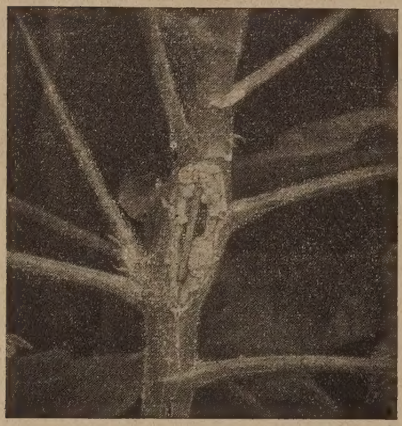
This want of parallelism, while offering some data on the question of the physical agent determining the biological effects recalled, tends to increase the knowledge on the susceptibility of the plant pathological meristems in respect of the different metallic treatments compared. It is undoubtedly useful, in effect, to experiment on these meristems which are the most susceptible to contact action by the same metals.

Therefore research was turned to the development of neoplasmic masses due to *Bact. tumefaciens* on *Pelargonium zonale*, by applying, immediately after the inoculation of the bacterium, a metal lamina on the surface of the incision made for inoculation and on which a pure culture of the bacterium had been spread. For the inoculation a part of the plant in active growth was selected, such as the region immediately below the apex; an opening was made in the form of a buttonhole, namely a longitudinel incision right through the stem, with a scalpel capable of piercing it through and through, taking care that the openings on both sides were the same size and the surfaces as equal as possible. In the opening thus made, after having smeared the two edges of the wound with a pure culture of the bacterium, a strip of metal, cut in such a way as to occupy practically the entire space of the opening, was introduced. In the control plants, in place of the



Zinc

Copper



Lead

Glass

Fig. 1-4. — The geraniums were inoculated with a pure culture of *Bacterium tumefaciens* and in the opening made by incision a lamina of zinc, copper, lead or glass (control) was introduced. The zinc prevented the formation of any trace whatsoever of tumour on the surface of the the cut with which it was in contact and on the other surface checked the the development of the neoplasmic tissue as soon as, in developing, it came into contact with the zinc; the copper did not prevent, not even at the points where it was in contact with the tissues, the formation of the tumour, but it reduced growth more so than did lead. The differences are clearly seen on comparison with the control plant, where glass was inserted instead of a metal.

The inoculation of the bacterium and the introduction of metals into the wound were carried out on January 24, 1938; the photographs were taken on March 16, 1938.

metal strip, a lamina of glass, which we consider as relatively inert to the tissues and to the pathogenic bacterium, was inserted.

Evidently, it was not possible to obtain nor to maintain an absolute adhesion between the metal and the surfaces of the cut on which the bacterium had been

Fig. 5. — The initial action, slightly depressing of the lead on contact, soon disappeared, to give place to a sharply stimulating action of the neoplasmic tissues which surrounded and enclosed the lead inserted in the wound: this leads to suppose that, in this phase of the experiment, the lead influences the tissues in development by a mechanism of the type of that put into effect by the metal in its action from a distance.

spread; however, in the parts not adhering to the metal, contact was subsequently effected through the intermediary of the neoplasmic tissues in process of development.

These experiments have, in short, given a result definitely positive, all the metals tried showing, from the very beginning of the tests, a depressing action on the development of the pathological growths, although to a degree varying appreciably according to the metal used.

The strongest depression of the development of the bacterial tumour was obtained in the inoculations covered with zinc laminae, while only a very slight depression was noted with lead and an intermediary development with copper. In every case, the neoplasmic masses appeared in the first phase of the experiment, inferior to those obtained in the controls with glass; subsequently, however, the tumours which developed on contact with lead, especially some where very thin strips of lead had been used, attained and even exceeded the development of the controls with glass.

The beginning of the development of tumours of *Bact. tumefaciens* on *Pelargonium*, therefore, is weakened appreciably by contact of the pathological meristemal tissues with copper and especially with zinc, while contact with lead determines at first a slight depression of the development of the tumour and subsequently

causes a stimulation, in comparison with the development of the tumours on the control plants. The biological effects of the metals acting by contact on the plant pathological meristems, therefore, are accomplished with effects contrary to those produced by the same metals when these act at a distance on the bacterial neoplasms: in this case, maximum and durable stimulating effects are obtained with lead, while zinc and copper manifest effects much inferior and differing little from each other, so that one may speak of a certain parallelism between the atomic weight of the metal and its biological action. On the contrary, in the case of metal in contact, considerable and lasting biological effects (depressants of the development of the tumour) are obtained, precisely in the case of copper and especially zinc, while the slight depression exercized by lead on the tissues forming the tumour is followed by a very evident stimulating impulse on these latter.

These results confirm in the first place that the action exercized on the living matter by the metal by contact is of a different nature to that excercized at a distance. In the experiments just described, the action of the metal is not effected through space but, on the contrary, on account of the sap expressed by the wound made in the tissues of the plant in order to introduce the parasitic bacterium. It may be thought that this sap, in view of its acidity, determines reactions of the metal which are not produced in the open air, and that the products of this reaction are toxic for the plant cells: this toxicity, which is slight or nil for the metal having an effective stimulating action on living matter when acting from a distance, is, on the contrary, very high for metals which, like zinc, exercize from a distance a minimum biological action.

The distinctions that we have made since the beginning of these experiments between the different biological actions of metals, brought into evidence by ourselves and confirmed in Italy and abroad (as was recalled in the previously cited successive reports), find a happy illustration in this experimentation: in fact, while the inhibitive action of zinc is maintained throughout the duration of the experiment, the depressing action of lead is afterwards transformed into a stimulating action of the neoplasm, which leads to suppose that the action of contact, so little efficacious on tumours in formation, should give place to an action of the type exercized by the metal at a distance. As for zinc, does the inhibitory action regard exclusively or principally the multiplication of the bacterium or, on the contrary, that of the cells of the host? In this case, does the action of the metal or of its compounds prevent the cellular multiplication of the cell become tumorous because of the action of the bacterium or, on the contrary, is it the transformation of the normal meristemal cells into tumorous cells which is prevented?

Further experimentation will make it possible to answer these questions.

It should also be added that the toxicity of zinc salts, up to the present employed very little in plant pathology, have shown, in these experiments and in others in course, good promise for the control of plant parasites.

In conclusion, it should be recognized, in this complex experimentation, that lead has a prevailing capacity of action on living matter at a distance and that zinc has a prevailing capacity of action by contact. Bacterial tumours of plants may be considered as being particularly adapted for disclosing and estimating these biological effects.

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LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany. — A Decree of April 25, 1942 extends to the occupied parts of Carinthia and Carniola the provisions of the Decrees of November 21, 1939, January 19, July 27 and August 17, 1940 relative to the control of the San José scale [*Aspidiotus perniciosus*] [see this *Bulletin*, 1940, No. 5, p. 103; No. 6, p. 123 and No. 12, p. 240 respectively]. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, Juli 1942, Bd. XIV, Nr. 3, S. 78).

*** A Decree, dated May 17, 1942, modifies the raising of carrier-pigeons The prohibition, *inter alia*, against keeping carrier-pigeons in a zone six km. distant from the frontier, is repealed. (*Nachrichtensblatt für den Deutschen Pflanzenschutzdienst*, Berlin, Anfang Juli 1942, 22. Jahrg., Nr. 7, S. 48).

*** By Decree of May 22, 1942, the importation of carnation slips from Denamark is authorized provided that the establishments of the growers are subjected to permanent phytosanitary control, that the consignments are

accompanied by an official certificate of health and origin and that on inspection on entry into Germany no symptom is found of the presence of disease or pests, in particular, the carnation leaf roller [*Tortrix pronubana*]. (*Ibid.*).

*** A communication transmitted to the press and published June 3, 1942, recalls to those concerned that the provisions in force allow the proprietors and usufructuaries of enclosed land to kill and appropriate wild rabbits without a permit. The use of rifles, however, is only allowed by means of special authorization. Snares and poison bait for destroying rabbits are prohibited. (*Ibid.*).

Germany (**Protectorate of Bohemia and Moravia**). — A Notification of the Minister of Agriculture and Forests, dated May 26, 1942, renders compulsory the disinfection of wheat, rye, barley and oats seed. The Ministry will publish a list of the means suitable for disinfecting the different cereals.

The communes are required to install a common disinfection centre as soon as necessary. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. Juli 1942, Bd. XIV, Nr. 3, S. 81-82).

*** A Notification of the Minister of Agriculture and Forests, dated April 28, 1942, prescribes the phytosanitary inspection of deciduous fruit and ornamental plants, as well as the living parts of these plants intended for reproduction before being dispatched to Germany. Dispatch will only be authorized if the result of inspection is favourable. (*Ibid.*, S. 79-80).

Germany (**Prussia**). — By Decree of March 26, 1942, the Decree dated April 16, 1941 regarding the control of the strawberry beetle (*Rhynchites germanicus*) [see this *Bulletin*, 1941, N°. 10, p. 188] continues in force for another year, namely, up to March 31, 1943, in certain communes of the district of Wiesbaden. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. Juli 1942, Bd. XIV, Nr. 3, S. 76).

*** A Decree of April 10, 1942 requires growers in Heswig Holstein to destroy the ' Raspglanzkäfer ' [*Meligethes aeneus*] attacking their rape and turnip crops, by following the rules established for the purpose by the Plant Protection Service (see this *Bulletin*, 1941, Nos. 7-8, p. 143]. (*Ibid.*, S. 77).

*** By Decree of April 17, 1942, it is prohibited, in certain districts of Pomerania, to use for potato cultivation seed potatoes taken from crops which have been recognized as severely affected by virus disease. (*Ibid.*, S. 76-77).

Germany (**Lower Styria**). — By virtue of the Decree of June 11, 1942, the regulation of the trade in poisons, including the means of control against plant diseases and pests, is adapted to the provisions in force in the Reich. *Inter alia*, the Decree of August 28, 1941 regulating the sale of control preparations containing thallium [see this *Bulletin*, 1941, No. 12, p. 223] will also be applied to the territory in question. (*Nachrichtenblatt für den Deutschen Pflanzenschutzedienst*, Berlin, Anfang August 1942, 22. Jahrg., Nr. 8, S. 54).

*** By Decree dated June 17, 1942, the provisions relative to the control of the San José scale [*Aspidiotus perniciosus*] adopted in Carinthia and in Carniola by the Decree of April 25, 1942 [see p. 141] are also put into force in Lower Styria.

Furthermore the former Austrian provisions of July 15, 1882 aiming at preventing the introduction of grape phylloxera [*Dactylosphaera vitifolii*] through international trade will also be applied. (*Amtliche Pfanzenschutzbestimmungen*, Berlin, 1. Juli 1942, Bd. XIV, Nr. 3, S. 78-79).

France. — By Law No. 810 of August 26, 1942 the syndical associations for permanent crop protection charged by the Law of March 25, 1941 [see this *Bulletin*, 1941, No. 10, p. 188) to organize, on a local basis, plant protection, are henceforth denominated: ' Groupements de défense permanente contre les ennemis des cultures '.

These ' groupements ' are constituted according to the Law of March 21, 1884, modified by the Law of March 12, 1920. (*Journal officiel de l'Etat français*, Vichy, 1er septembre 1942, LXXIVème année, nº 209, p. 2986).

Hungary. — The Royal Legation of Hungary at Rome has forwarded to the International Institute of Agriculture a list of the signatures of the experts authorized, for 1942, to sign the certificates issued by the Phytosanitary Service of the Kingdom of Hungary.

Italy. — Ministerial Circular No. 300 of May 20, 1942 modifies Ministerial Circular No. 255 of March 17, 1942 [see this *Bulletin*, 1942, Nos. 7-8, p. 107] relative to the organization of locust control. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*. Roma, 21 giugno-1º luglio 1942, anno XIV, nn. 18-19, p. 985).

*** Ministerial Circular No. 302, dated May 21, 1942, referring to Ministerial Circular No. 268 of April 1, 1942 [see this *Bulletin*, 1942, No. 9, p. 122] regards the assembling of all useful information relative to experiments made by private wine-growers with preparations not containing copper or with new products having a reduced copper content. (*Ibid.*, p. 986).

*** Ministerial Circular No. 307, dated June 2, 1942, contains directions for the use of products to be employed in the control of downy mildew of the vine [*Plasmopara viticola*]. (*Ibid.*, 11 luglio 1942, n. 20, pp. 1131-1132).

*** Ministerial Circular No. 316 of June 16, 1942 deals with the measures suitable for preventing the damage caused by game by the use of poisons in agriculture. (*Ibid.*, pp. 1136-1137).

*** Royal Decree No. 980 of July 17, 1942 relative to the organization of the departments of the Ministry of Agriculture and Forests in the territories recently annexed to the Kingdom of Italy lays down, *inter alia*, that branches specialized in plant protection, subordinate to the provincial Inspectorates of Agriculture, may be created in accordance with Art. 26 of Royal Decree No. 489 of May 29, 1942 [see this *Bulletin* 1941, No. 9, pp. 165-166].

With this end in view the total of the said branches provided for by the abovementioned Article is increased to seventy-two. (*Gazzetta Ufficiale del Regno d'Italia*, Roma 9 settembre 1942, anno 83°, n. 212, pp. 3732-3733).

*** By Ministerial Decree of July 30, 1942, the importation into Sardinia of plants and parts of plants including fruits and seed from other regions of Italy is authorized solely through the ports of Cagliari and Olbia after phytosanitary inspection to be carried out by the Royal Observatory of Phytopathology for Sardinia.

The aforesaid plant products should be accompanied by a certificate of health and origin testifying that they are free from dangerous and easily spread animal and plant pests and, in particular, from *Laspeyresia* [*Cydia*] *molesta*, *Iridomyrmex humilis*, *Ceroplastes sinensis*, *Deuterophoma tracheiphila*, *Blepharospora* [*Phytophthora*] *cambivora* and *Graphium ulmi*. (*Ibid.*, 19 agosto 1942, n. 194, p. 3401).

*** A Ministerial Decree, dated July 31, 1942, establishes the modalities for the import from abroad, by way of exception, of potatoes intended exclusively for planting for the 1942-43 crop season.

The importation of tubers taken from crops affected by virus diseases or from a locality infested by *Doryphora* [*Leptinotarsa*] *decemlineata*, *Synchytrium endobioticum*, *Phthorimaea operculella*, *Heterodera rostochiensis*, *Epitrix cucumeris* and other pests not allowed by ths control organizations of the producing countries, is prohibited. (*Ibid.*, 11 agosto 1942, n. 188, pp. 3327-3329).

Rumania. — Ministerial Decision No. 5.195 dated March 12, 1942 gives, in French and Rumanian, the list of experts deputed to sign the phytosanitary certificates which have to accompany consignments of agricultural products sent from Rumania, together with the facsimile of their respective signatures. (*Monitorul Oficial* (Partea I), Bucureşti, 20 Iunie 1942, Anul CX, Nr. 141, pag. 5086-5087).

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The third part concerns the variations in resistance due to nutrient intake or in relation to the supply of organic and inorganic substances, in regard to chlorophyll photosynthesis, to the products obtained from the chemism of the fungi or as a result of previous disease or of ambient factors.

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